

WHAT IS CLAIMED IS:

1. An electric equipment for mounting on vehicles; wherein any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with a metal plated layer, chromate film, and organic resin coating.

2. An electric equipment for mounting on vehicles; wherein any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with an alkali zinc plated layer, chromate film, and phenol group resin electrostatic coating.

3. An electric equipment for mounting on vehicles; wherein any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with a metal plated layer, phosphate film, and organic resin coating.

4. An electric equipment for mounting on vehicles; wherein any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with an alkali zinc plated layer, phosphate film, and phenol group resin electrostatic coating.

5. An electric equipment for mounting on vehicles as claimed in any of claims 1 and 3; wherein

said metal plated layer is made of any one of Zn and Zn alloys, Ni and Ni alloys, and Sn and Sn alloys.

6. An electric equipment for mounting on vehicles as claimed in any one of claims 1, 3, and 5; wherein

said organic resin coating is made of any one of epoxy resin, phenol resin, acrylic resin, polyester resin, styrene resin, polyethylene resin, and polyurethane resin.

7. An electric equipment for mounting on vehicles as claimed in any one of claims 1 to 6; wherein

degreasing, a phosphoric acid treatment, and a cleaning treatment are performed prior to coating with any of said metal plated layer and said alkali zinc plated layer.

8. An electric equipment for mounting on vehicles as claimed in any one of claims 1 to 7; wherein

a ultrasonic cleaning treatment and a diluted sulfuric acid treatment are performed sequentially after coating with any of said metal plated layer and said

alkali zinc plated layer, prior to any of said chromate treatment and said phosphoric acid treatment.

9. An electric equipment for mounting on vehicles as claimed in any one of claims 1, 2, 5 to 8; wherein

the additive amount of chromium by the chromate treatment is desirably in the range of 10-100 mg/m².

10. An electric equipment for mounting on vehicles as claimed in any one of claims 1 to 10; wherein

the additive amount of paint by the organic coating is in the range of 50-200 mg/m².

11. A rotary electric machines comprising:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in any one of claims 1 to 10.

12. An electromagnetic switch comprising:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger; wherein

said yoke is composed of the electrical equipment for mounting on vehicles as claimed in any one of claims 1 to 10.

13. A rotary electric machine as claimed in claim 11, wherein

said yoke single member before assembling is coated with any one of said metal plated layer, alkali zinc plated layer, chromate film, and phosphoric acid anodic oxide film; and

said yoke after assembling with said magnetic field device by fixing is coated with any of said organic coating and phenol group electrostatic coating.

14. A rotary electric machine as claimed in any of claims 11 and 13, wherein

said yoke is made of mild steel composed of C equal to or less than 0.12%, Si equal to or less than 0.35, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

15. An electromagnetic switch as claimed in claim 12, wherein said yoke single member before assembling is coated with any one of said metal plated layer, alkali zinc plated layer, chromate film, and phosphoric acid anodic oxide film; and

 said yoke after assembling with said magnetic field device by fixing is coated with any of said organic coating and phenol group electrostatic coating.

16. An electromagnetic switch as claimed in any of claims 12 and 15, wherein

 said yoke is made of mild steel composed of C equal to or less than 0.10%, Mn equal to or less than 0.60%, and the residual is substantially Fe, respectively by weight.

17. A starter for internal combustion engine composed of:
 the rotary electric machine as claimed in any one of claims 11, 13, and 14;
and

 the electromagnetic switch as claimed in any one of claims 12, 15, and 16.

18. A manufacturing method of electric equipment for mounting on vehicles; wherein

any of outer surface and surface exposed to outward of magnetic core housing is coated sequentially with a metal plated layer, chromate film, phosphoric acid anodic oxide film, and organic resin coating, after performing sequentially degreasing, phosphoric acid treatment, and cleaning treatment.

19. A manufacturing method of electric equipment for mounting on vehicles; comprising the steps of:

coating any of outer surface and surface exposed to outward of magnetic core housing with a metal plated layer,

treating by a ultrasonic cleaning treatment and a diluted sulfuric acid treatment,

coating with any of chromate film and phosphoric acid anodic oxide film, and subsequently,

coating with organic resin coating.

20. A manufacturing method of electric equipment for mounting on vehicles; comprising the steps of:

treating any of outer surface and surface exposed to outward of magnetic core housing with degreasing, phosphoric acid treatment, and cleaning treatment,

coating with a metal plated layer,

treating by a ultrasonic cleaning treatment and a diluted sulfuric acid treatment,

coating with any of chromate film and phosphoric acid anodic oxide film, and subsequently,

coating with organic resin coating.

21. A manufacturing method of rotary electric machine: said rotary electric machine comprises:

a cylindrical yoke, wherein a magnetic field device is fixed onto inner circumferential plane,

a front bracket and a rear bracket, each of which is provided respectively at one end and the other end of said yoke in the axial direction, and

a rotor, wherein

said yoke is manufactured by the manufacturing method of the electrical equipment for mounting on vehicles as claimed in any one of claims 18 to 20.

22. A manufacturing method of electromagnetic switch: said electromagnetic switch comprises:

a cylindrical yoke, wherein a cylindrical magnetic field device is fixed at inner circumferential plane, a plunger provided at one end in the axial direction of the yoke, which is movable in the magnetic field device in the axial direction, and

a magnetic core provided at another end of the yoke facing to the plunger;
wherein

 said yoke is manufactured by the manufacturing method of the electrical
 equipment for mounting on vehicles as claimed in any one of claims 18 to 20.

23. A manufacturing method of starter for internal combustion engine:
 the starter comprises a rotary electric machine and an electromagnetic
 switch, wherein

 said rotary electric machine is manufactured by the manufacturing
 method of rotary electric machine as claimed in claim 21; and

 said electromagnetic switch is manufactured by the manufacturing
 method of electromagnetic switch as claimed in claim 22.